

OCEAN ICE.

Chart ii. also exhibits the southern and eastern limits of icebergs observed in the north Atlantic ocean during the month of March and up to April 12th. This chart is based on reports communicated by shipmasters to this office; reports furnished through the co-operation of the "New York Herald Weather Service," and other data published in the "New York Maritime Register."

During the period from March 8th, to April 12th, the southern limits of the ice region extended to N. 41° 20', while its eastern limits reached W. 40°. The reports show that icebergs were most numerous from N. 42° 30', W. 52° northeastward to N. 44°, W. 43°. During the last decade of the period (April 2-12th) there was a marked diminution in the number of icebergs observed; several steamers arriving at American ports reported that no ice was observed south of N. 42°.

Compared with the chart for the preceding month (February-March) there has been a southerly movement of about 40', but the most decided extension has been eastward, where the limit of the ice region is 3° east of that for the preceding month.

A comparison with the chart for the same period in 1883 shows that the icebergs have drifted much farther to the eastward during the present year, the eastern limit of ice region being about 4° east of that for 1883. The southern limit remained nearly the same in both years.

Icebergs were reported as follows:

8th.—Ship "Wilhelm," in N. 41° 20', W. 54° 06', saw numerous icebergs; s. s. "Saint Laurent," in N. 44° 28', W. 46° 07', passed about four miles south of an iceberg about half a mile long and fifty feet high, also sighted two enormous icebergs to the northward, also at 11.30 p. m. passed an iceberg in N. 43° 53', W. 48° 25'.

9th.—S. S. "Saint Laurent," in N. 43° 30', W. 50° 33', passed a small iceberg; bark "Orpheus," in N. 42° 51', W. 47° 10', passed seven small icebergs ranging from eighty to one hundred and fifty feet high. Ship "Anna," in 44° 11', W. 43° 55', passed a large iceberg about one hundred and twenty feet high.

10th.—S. S. "Donau," between N. 43° 51', W. 44° 51' and 42° 52', W. 48° 49', passed several icebergs; s. s. "Grecian," in 42° 18', W. 49°, passed a large iceberg; also passed two icebergs in N. 42° 30', W. 48° 20'. Bark "Montreal," in N. 43°, W. 50°, passed several icebergs.

11th.—S. S. "France" (Fr.), in N. 43° 07', W. 42° 04', passed an iceberg about sixty-five feet high and nearly a mile long; bark "Orpheus," in N. 42° 50', W. 51° 12', saw several icebergs.

13th.—S. S. "Circassian," in N. 41° 6', W. 49° 25', passed a large iceberg; temperature of the water changing suddenly from 51° to 32°; also, in N. 42° 22', W. 46° 15', passed a large iceberg, temperature of water, 60°. Ship "Anna," in N. 42° 29', W. 48° 46', passed a small iceberg.

15th.—S. S. "Bolivia," in N. 43° 26', W. 42° 49', passed a small iceberg; U. S. steamer "Thetis," in N. 46° 45', W. 47° 31', passed through seventy-five miles of ice; s. s. "Illinois," in N. 42° 58', W. 43° 05', passed a large iceberg fifty or sixty feet high; s. s. "Silesia," between N. 44° 3', W. 45° 30', and N. 43° 32', W. 47° 14', passed several large icebergs; s. s. "Thingvalla," in N. 45° 58', W. 41° 27', passed a large iceberg; s. s. "Canada" (Fr.) passed several icebergs between N. 45° 51', W. 42° 08', and N. 43° 46', W. 46° 43'.

16th.—S. S. "Iowa," in N. 45° 00', W. 41° 30', passed a large iceberg; s. s. "Lord Clive," in N. 44° 00', W. 43° 00', passed a large iceberg.

17th.—S. S. "State of Nebraska," from N. 42° 43', W. 47° 25' to N. 42° 37', W. 49° 35', passed several icebergs and some small pieces of ice; s. s. "Thingvalla," passed several icebergs between N. 43° 40', W. 47° 30' and N. 42° 46', W. 52° 46'; s. s. "Iowa," passed three icebergs in N. 43° 50', W. 44° 44'.

18th.—S. S. "Lord Clive" crossed W. 50° in N. 41° 25' and saw no ice; s. s. "Rhaetia," in N. 42° 23', W. 51° 50', passed

an iceberg about one hundred feet high; s. s. "Iowa," in N. 42° 10', W. 49° 42', saw several icebergs; ship "Columbus," in N. 44° 50', W. 45° 20', passed an ice-field and about twenty large and small icebergs.

19th.—Ship "Columbus," in N. 44°, W. 46°, passed a large iceberg.

22d.—S. S. "Moravia," in N. 43° 34', W. 45° 48', passed an iceberg; s. s. "Amerique," in N. 44° 20', W. 44° 33', passed an iceberg; ship "Columbus," in N. 42° 00', W. 49° 40', passed a large iceberg; s. s. "Habsburg," in N. 43° 38', W. 44° 39', passed three small icebergs.

23d.—S. S. "Lydian Monarch," in N. 43° 35', W. 44° 40', passed an iceberg; s. s. "Sorrento," in N. 41° 45', W. 52° 30', passed a small iceberg; s. s. "Cephalonia," in N. 45° 16', W. 42° 34', passed two icebergs; s. s. "Werra," between N. 43° 57', W. 42° 00', and N. 43° 47' W. 42° 34', passed several icebergs; s. s. "Saint Laurent," in N. 42° 10', W. 50° 25', passed an iceberg.

24th.—S. S. "Lydian Monarch," in N. 41° 48', W. 52° 55', passed an iceberg; ship "Columbus," in N. 41° 30', W. 53° 47', passed a large iceberg.

25th.—S. S. "Eider," in N. 44° 09', W. 40° 27', passed an iceberg bearing nnw., distant fifteen miles; s. s. "Wieland," in N. 44° 12', W. 44° 58', passed an iceberg four hundred feet long and one hundred feet high.

26th.—S. S. "Eider," in N. 42° 57', W. 49° 58', passed several small pieces of ice; also in N. 42° 55', W. 50° 32', an iceberg bearing n., about fifteen miles distant; bark "Erinna," in N. 43° 20', W. 48° 50', passed a large iceberg.

27th.—S. S. "Salerno," in about N. 42° 36', W. 43° 39', passed a very large iceberg together with several small bergs. The large berg appeared to be about a mile long and one mile broad, and the appearance of an island; very dangerous to navigation, especially in thick, hazy weather.

28th.—S. S. "Ontario," in N. 45° 00', W. 40° 15', passed an iceberg.

29th.—Ship "E. W. Stetson," in N. 42° 05', W. 53° 20', passed one large and two small icebergs.

April 2d.—S. S. "Tower Hill," at New York, reported having passed large numbers of icebergs between N. 44° 50', W. 47° 26', and N. 43° 23' W. 51°; s. s. "Somerset," in N. 45° 24', W. 43° 34', passed a large iceberg.

April 11th.—S. S. "Labrador," in N. 43° 11', W. 52° 23', passed a large iceberg.

April 13th.—S. S. "Bristol," at New York, crossed W. 50° in latitude 42°, and saw no ice; s. s. "Llandaff City," at New York, reported: "saw no ice south of N. 42°."

TEMPERATURE OF THE AIR.

[Expressed in degrees, Fahrenheit.]

The distribution of mean temperature of the United States and Canada for March, 1884, is exhibited on chart iii. by the dotted isothermal lines.

The following are some of the highest and lowest monthly mean temperatures reported from the Signal Service stations:

Stations reporting highest.	Stations reporting lowest.
Key West, Florida..... 74.7	Pike's Peak, Colorado..... 4.9
Rio Grande City, Texas..... 72.2	Saint Vincent, Minnesota..... 10.7
Brownsville, Texas..... 69.6	Mount Washington, New Hampshire..... 12.2
Sanford, Florida..... 68.4	Moorhead, Minnesota..... 14.7
Jacksonville, Florida..... 66.3	Fort Buford, Dakota..... 19.6
Indianola, Texas..... 65.7	Bismarck, Dakota..... 19.7
Galveston, Texas..... 64.8	Escanaba, Michigan..... 21.1
New Orleans, Louisiana..... 64.8	Duluth, Minnesota..... 22.1
Pensacola, Florida..... 63.1	Marquette, Michigan..... 22.7
Mobile, Alabama..... 62.2	Mackinaw City, Michigan..... 23.0
Savannah, Georgia..... 61.7	Huron, Dakota..... 25.7

In the following table are shown the normal temperatures for March, the mean temperatures for March, 1884, and the departure from the normal, in the several geographical districts, as deduced from the records of the Signal Service:

Average temperatures for March, 1884.

Districts.	Average for March. Signal-Service ob- servations.		Comparison of March, 1884, with the average for several years.
	For sev- eral years.	For 1884.	
New England	33.9	33.9	normal.
Middle Atlantic states.....	40.8	41.5	0.7 above.
South Atlantic states.....	54.4	57.0	2.6 above.
Florida peninsula.....	68.2	69.2	1.0 above.
Eastern Gulf states.....	58.2	59.6	1.4 above.
Western Gulf states.....	59.4	60.2	0.8 above.
Rio Grande valley.....	70.0	70.9	0.9 above.
Tennessee.....	50.5	51.4	0.9 above.
Ohio valley.....	42.2	43.4	1.2 above.
Lower lake region.....	31.8	31.3	0.5 below.
Upper lake region.....	27.3	26.1	1.2 below.
Extreme northwest.....	26.4	17.4	3.0 below.
Upper Mississippi valley.....	37.2	39.0	0.6 below.
Missouri valley.....	33.8	33.4	0.4 below.
Northern slope.....	33.3	28.3	5.0 below.
Middle slope.....	42.7	42.1	0.6 below.
Southern slope.....	56.9	59.7	0.2 below.
Southern plateau.....	53.3	59.3	3.0 below.
Northern plateau.....	44.3	42.1	2.2 below.
North Pacific coast region.....	46.3	44.5	1.8 below.
Middle Pacific coast region.....	54.4	52.8	1.6 below.
South Pacific coast region.....	58.7	57.4	1.3 below.
Mount Washington, N. H.....	11.1	12.2	1.1 above.
Pike's Peak, Colo.....	8.1	4.9	3.2 below.
Salt Lake City, Utah.....	40.6	40.6	normal.

From the above table it is shown that at Salt Lake City, Utah, and in New England the mean temperature of the month did not differ from the normal. In the Ohio and Rio Grande valleys, Tennessee, Florida, middle and south Atlantic, and Gulf states, the mean temperature of the month was above the normal. In the middle Atlantic and western Gulf states, Rio Grande valley, and Tennessee, the departures were less than 1°; in the Ohio valley and eastern Gulf states they were 1°.2 and 1°.4, respectively; and in Florida and the south Atlantic states, they varied from 1°.0 to 2°.6. In the lake region, extreme northwest, upper Mississippi and Missouri valleys, Rocky mountain regions, (except at Salt Lake City), and in the Pacific coast districts, the month was colder than the average. The greatest departure below the normal, 5°, occurred in the northern slope. On the Pacific coast the departures varied from 1°.3 in southern California, to 1°.8 in Oregon and Washington Territory; in the extreme northwest and southern plateau, they were 3°; in the lower lake region, upper Mississippi and Missouri valleys, and middle and southern slopes, they varied from 0° to 0°.

DEVIATIONS FROM MEAN TEMPERATURE.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average temperatures for March, 1884. The following notes in connection with this subject are reported by voluntary observers:

Arkansas.—Lead Hill, Boone county: mean temperature, 48° 7, is 1° 8 below the March average of the last two years.

Illinois.—Anna, Union county: mean temperature, 45° 7, is 0° 6 below the March average of the last nine years. The highest March mean temperature of that period, 53° 7, occurred in 1878; the lowest, 40° 9, occurred in 1876.

Riley, McHenry county: mean temperature, 29° 2, is 0° 7 below the March average of the last twenty-three years.

Mattoon, Coles county: mean temperature, 41° 0, is 2° 8 below the March average of the five preceding years.

Swanwick, Perry county: mean temperature, 43° 4, is 0° 5 below the March average of the two preceding years.

Indiana.—Wabash, Wabash county: mean temperature, 37° 3, is 0° 7 below the March average of the last eight years.

Logansport, Cass county: mean temperature, 37° 6, is 2° 3 below the March average of the last twenty-five years. The monthly extremes are: maximum 73°, minimum —4°, which are 0° 2 and 14° 7 below their respective normals for the period mentioned. The mean temperature of the winter season (from November 1st to March 31st inclusive) of 1883-4, is 31° 67, which is 0° 14 above the average of the corresponding period of the last twenty-five years.

Table of maximum and minimum temperatures for March, 1884.

State or Territory.	Signal Service.		U. S. Army Post Surgeons, or Voluntary Observers.		
	Station.	Max. Min.	Station.	Max. Min.	
Alabama.....	Montgomery.....	83 32	Mt. Vernon Bar'ks.....	84 23	
Do.....	Mobile.....	84 37	Auburn.....	78.5 25.5	
Arizona.....	Wilcox.....	76 12	Fort Lowell.....	56 33	
Do.....	Fort Apache.....	66 15			
Arkansas.....	Fort Smith.....	83 24	Lead Hill.....	79 17	
Do.....	Little Rock.....	78 28	Fayetteville.....	73 14	
California.....	Red Bluff.....	72 32	Angel Island.....	82 43	
Do.....	Fort Bidwell.....	60 12	Fort Bidwell.....	63 15	
Colorado.....	West Las Animas.....	79 9	Fort Lyon.....	80 9	
Do.....	Pike's Peak.....	17 —20	Gunnison.....	43 —18	
Connecticut.....	New London.....	60 4	Voluntown.....	64 —2	
Do.....	New Haven.....	58 1			
Dakota.....	Fort Bennett.....	71 —11	Fort Sully.....	72 —6	
Do.....	Fort Buford.....	59 —23	Webster.....	54 —31	
Delaware.....	Del. Breakwater.....	62 15			
District of Columbia.....	Washington City.....	67 13	Rock Creek Bridge.....	70 16	
Florida.....	Sanford.....	88 43	Archer.....	93 36	
Do.....	Pensacola.....	83 38	Fort Barrancas.....	85 34	
Georgia.....	Savannah.....	83 34	Quitman.....	82 41	
Do.....	Atlanta.....	79 21	Milledgeville.....	79 21	
Idaho.....	Coand'Alene.....	50 0	Fort Lapwai.....	64 19	
Do.....	Lewiston.....	62 24			
Illinois.....	Chgo.....	71 19	Bunker Hill.....	72 5	
Do.....	Chicago.....	59 —1	Riley.....	64 —10	
Indiana.....	Indianapolis.....	70 5	Vevay.....	75 6	
Do.....			La Fayette.....	70 —5	
Indian Territory.....	Cantonment.....	79 14			
Iowa.....	Des Moines.....	70 —6	Des Moines.....	72 —8	
Do.....	Davenport.....	65 8	Cresco.....	66 —16	
Kansas.....	Dodge City.....	70 6	Manhattan.....	80 10	
Do.....	Leavenworth.....	70 11	Albion.....	70 0	
Kentucky.....	Louisville.....	75 13	Bowling Green.....	74 6	
Louisiana.....	New Orleans.....	80 41	Grand Coteau.....	80 38	
Do.....	Shreveport.....	82 33	Liberty Hill.....	77 48	
Maine.....	Portland.....	59 3	Cornish.....	58 4	
Do.....	Eastport.....	48 1	Gardiner.....	48 —19	
Maryland.....	Baltimore.....	60 14	Emmitsburg.....	59 9	
Do.....	Ocean City.....	60 14	McDonough.....	62 3	
Massachusetts.....	Boston.....	60 4	Somerset.....	69 2	
Do.....	Provincetown.....	57 0	Westborough.....	66 3	
Michigan.....	Detroit.....	57 3	Lansing.....	64 —9	
Do.....	Marquette.....	53 —27	Fort Brady.....	57 —28	
Minnesota.....	Saint Paul.....	60 —12	Chester.....	63 —18	
Do.....	Saint Vincent.....	58 —27	Hastings.....	62 —22	
Mississippi.....	Vicksburg.....	80 35			
Missouri.....	Saint Louis.....	69 10	Centerville.....	82 6	
Do.....			Kirkville.....	70 —3	
Montana.....	Fort Custer.....	60 —13	Fort Keogh.....	68 —25	
Do.....	Fort Assinaboine.....	57 —20	Fort Assinaboine.....	55 —32	
Nebraska.....	Omaha.....	67 —3	Red Willow.....	77 0	
Do.....	North Platte.....	65 —1	Genoa.....	69 —11	
Nevada.....			Carson City.....	60 21	
New Hampshire.....	Mount Washington.....	42 —25	Cotoocook.....	56 —11	
New Jersey.....	Sandy Hook.....	64 7	Paterson.....	69 6	
Do.....	Atlantic City.....	60 8	Somerville.....	62 3	
New Mexico.....	Fort Craig.....	72 20	Fort Union.....	63 9	
Do.....	Fort Stanton.....	68 15	Fort Wingate.....	59 11	
New York.....	New York City.....	63 5	Fort Columbus.....	62 7	
Do.....	Buffalo.....	61 2	Plattsburg Bar'ks.....	51 —5	
North Carolina.....	Scotts Hill.....	81 20	Chapel Hill.....	80 16	
Do.....	Wash Woods.....	72 21	Highlands.....	69 10	
Ohio.....	Cincinnati.....	72 14	Cincinnati.....	70 9	
Do.....	Cleveland.....	65 2	Garrettsville.....	62 —10	
Oregon.....	Lake View.....	50 15	Albany.....	66 31	
Do.....	Roseburg.....	64 28	Fort Klamath.....	56 6	
Pennsylvania.....	Pittsburg.....	71 10	Lettsdale.....	66 1	
Do.....	Erie.....	64 1	Franklin.....	60 —10	
Rhode Island.....	Narragansett Pier.....	60 4			
Do.....	Point Judith.....	58 0			
South Carolina.....	Charleston.....	81 34	Aiken.....	80 23	
Tennessee.....	Chattanooga.....	78 23	Flippin.....	80 —	
Do.....	Knoxville.....	75 14	Andersonville.....	— 10	
Texas.....	Rio Grande City.....	98 32	Fort Concho.....	89 26	
Do.....	Fort Elliott.....	80 16	Chelourne.....	84 28	
Utah.....	Salt Lake City.....	58 24	Neph.....	52 18	
Vermont.....			Burlington.....	56 —5.3	
Do.....			Newport.....	54 —24	
Virginia.....	Cape Henry.....	70 23	Marion.....	72 8	
Do.....	Fort Myer.....	65 10	Snowville.....	69 9	
Washington Territory.....	Olympia.....	61 25	Bainbridge Island.....	66 22	
Do.....	Spokane Falls.....	58 12	Pleasant Grove.....	63 3	
West Virginia.....			Helvetia.....	68 8	
Wisconsin.....	La Crosse.....	66 —10	Evansville.....	68 —15	
Do.....	Milwaukee.....	58 —8.5	Wausau.....	58 —25	
Wyoming.....	Cheyenne.....	59 2	Fort Fred Steele.....	55 —2	

Vevay, Switzerland county: mean temperature, 45° 01, is 2° 81 above the March average of the last twenty years.

Kansas.—Yates Centre, Woodson county: mean temperature, 41° 8, is 1° 4 above the March average of the last four years.

Wellington, Sumner county: mean temperature, 41° 56, is 2° 24 below the March average of the last five years.

Independence, Montgomery county: mean temperature, 44° 1, is 1° 3 below the March average of the last thirteen years.

Lawrence, Douglas county: mean temperature, 41° 56, is 0° 23 below the March average of seventeen years.

Maine.—Gardiner, Kennebec county: mean temperature, 27° 8, is 1° 8 below the March average of the last forty-eight years. The mean temperature of the winter season of 1883-'84 is 23° 19, or 0° 56 above the winter average of the last forty-eight years.

Maryland.—Fallston, Harford county: mean temperature, 38° 67, is 0° 03 below the March average of the last thirteen years.

Massachusetts.—Worcester, Worcester county: mean temperature, 26° 7, is 5° 6 below the March average of the last

forty-five years. The mean temperature of the winter season of 1883-'84 is 28° 2, which is 1° 4 below the winter average of the period above mentioned. The coldest March of the last forty-five years was that of 1856, mean temperature, 22° 9; the warmest March of same period was that of 1871, mean temperature, 40°.

Missouri.—Saint Louis: mean temperature, 41° 8, is 1° 6 below the March normal of the last forty-seven years, there being only four cases during that period in which the mean temperature of March was lower.

Table of comparative minimum temperatures for the month of March.

State or Territory.	Minimum for March, 1884, Signal Service.		Minimum since Signal-Service stations were opened—3 to 13 years.			Lowest from any other source.			
	Station.	Temperature.	Station.	Temperature.	Year.	Place.	Temperature.	Year.	Length of record.
Alabama	Mobile	37	Mobile	31	1876	Huntsville	11		9
Do	Montgomery	32	Montgomery	25	1873	Thomas Barracks	18	1876, 1878	3
Arizona	Wilcox	12	Prescott	8	1876	Fort Canby (old)	1		12
Do	Fort Apache	15	Fort Apache	11	1881	Fort Apache	5	1875	8
Arkansas	Little Rock	28	Little Rock	32	1880, 1881	Fort Smith	3		22
Do	Fort Smith	24	Fort Smith	28	1883	Durham	2	1876	1
California	Red Bluff	32	Canby	15	1882	Camp Bidwell	0		19
Do	Fort Bidwell	12	Red Bluff	28	1880	Fort Crook	2		12
Colorado	West Las Animas	9	Denver	10	1880	Fort Lyon	7		23
Do	Pike's Peak	20	Pike's Peak	29	1875	Pagosa Springs	20	1881	2
Connecticut	New Haven	1	New Haven	6	1875, 1879	Colebrook	10		12
Do	New London	4	New London	7	1876	New Haven	9		86
Dakota	Fort Buford	23	Pemba	40	1873	Fort Abercrombie	40	1861, 1869?	19
Do	Fort Sully	19	Fort Stevenson	28	1879	Fort Buford	40	1867	14
Delaware	Delaware Breakwater	15	Delaware Breakwater	25	1880	Fort Delaware	5		45
District of Columbia	Washington City	13	Washington City	4	1873	Washington City	5		49
Florida	Pensacola	38	Jacksonville	31	1873, 1879	Fort Barrancas	28		50
Do	Jack-sonville	42	Saint Mark's	32	1876	Fort King	27		10
Georgia	Augusta	28	Augusta	22	1873	Fort McPherson	9	1877	7
Do	Atlanta	24	Atlanta	29	1881	Atlanta	12		6
Idaho	Coeur d'Alene	0	Eagle Rock	10	1882	Fort Hall	1		5
Illinois	Boise City	29	Boise City	10	1880	Fort Lapwai	1		19
Indiana	Chicago	1	Chicago	1	1873	Rock Island Arsenal	11		11
Do	Springfield	7	Champaign	11	1881	Belvidere	20	1877	5
Indiana	Indianapolis	5	Indianapolis	2	1873	Spiceland	0		14
Do						Kokomo	10	1875	1
Indian Territory	Cantonment	14	Fort Gibson	7	1876	Fort Gibson	7		48
Do			Fort Sill	10	1880	Camp Supply	2	1876	2
Iowa	Des Moines	6	Dubuque	10	1875	Algona	25		10
Do	Davenport	8	Davenport	6	1873	Vale	20	1880	7
Kansas	Dodge City	6	Dodge City	8	1889	Fort Riley	20		21
Do	Leavenworth	11	Leavenworth	2	1876	Fort Leavenworth	9		52
Kentucky	Louisville	13	Louisville	3	1873	Newport Barracks	3		29
Louisiana	Shreveport	33	Shreveport	26	1879	Fort Jesup	10		23
Do	New Orleans	41	New Orleans	35.5	1876	Baton Rouge	26		58
Maine	Eastport	1	Eastport	1	1875, 1880	Gardiner	20		43
Do	Portland	3	Portland	1	1875	Brunswick	19		53
Maryland	Baltimore	13	Baltimore	5	1873	Fort McHenry	0		53
Massachusetts	Provincetown	8	Springfield	5.5	1875	Williamstown	12		63
Do	Boston	4	Boston	2	1873	Billerica	14	1875	11
Michigan	Escanaba	27	Escanaba	20	1875	Fort Brady	32	1875	60
Do	Mackinaw City	20	Marquette	14	1875	Ontonagon	22		11
Minnesota	Saint Vincent	27	Breckenridge	32	1875	Fort Ripley	37		18
Do	Moorhead	23	Saint Paul	22.5	1873	Fort Snelling	24		63
Mississippi	Vicksburg	10	Vicksburg	27	1876	Columbus	20		10
Missouri	Saint Louis	35	Saint Louis	8	1873, 1876	Harrisonville	12		6
Do						Saint Louis	6		39
Montana	Fort Assinaboine	26	Fort Benton	18	1876	Fort Ellis	36		14
Do	Fort Shaw	22	Fort Shaw	18	1882	Fort Benton	42	1870	12
Nebraska	North Platte	1	North Platte	21	1880	Glendale	20	1868	2
Do	Omaha	3	Omaha	7	1880	Bellevue	15		11
Nevada	Mount Washington	25	Winnemucca	3	1882	Camp Halleck	8	1880	13
New Hampshire	Mount Washington	25	Mount Washington	31	1874	Dartmouth College	23		18
New Jersey	Barneget City	7	Cape May	9	1874	Paterson	0		9
Do	Atlantic City	7	Squann Beach	9	1875	Newark	2		18
New Mexico	Fort Stanton	15	Santa Fé	0	1880	Fort Union	12	1880, 1882	32
New York	Buffalo	2	Albany	4	1875	Madison Barracks	34		57
Do	Rochester	2	Oswego	2.5	1875	Sackett's Harbor	30		8
North Carolina	Scotts Hill	20	Wilmington	20	1873	Franklin	0	1870	5
Do	Wash Woods	21	Kitty Hawk	20	1870	Fort Johnson	14		58
Ohio	Cleveland	2	Cleveland	2	1873	Granville	14		16
Do	Toledo	3	Toledo	1	1873	New Lisbon	12		6
Oregon	Linkville	15	Unatilla	11.5	1880	Camp Harney	3		6
Do	Roseburg	28	Roseburg	19	1880	Fort Klamath	10	1882	7
Pennsylvania	Erie	1	Erie	2	1877	Pennsylvania (near)	14		6
Do	Pittsburg	10	Pittsburg	2	1873, 1877	Philadelphia	5		123
Rhode Island	Narragansett Pier	4	Newport	9	1870	Fort Adams	4		44
South Carolina	Charleston	34	Charleston	25	1873	Fort Moultrie	25		38
Do						Charleston	31		105
Tennessee	Knoxville	14	Knoxville	6	1873	Glenwood Cottage	11		11
Do	Chattanooga	23	Nashville	11	1873	Humboldt	5	1870	11
Texas	Fort Elliott	10	Fort Elliott	2	1880	Fort Davis	9		23
Do	El Paso	26	Coleman City	14	1880	Fort Elliott	1	1880	2
Utah	Salt Lake City	24	Salt Lake City	4	1874	Fort Crittenden	2		3
Vermont			Burlington	4	1873	Randolph	27		5
Do						Lunenburg	23		18
Virginia	Fort Myer	10	Wytheville	1	1873	Fortress Monroe	13		58
Do	Wytheville	10	Lynchburg	0	1873	Snowville	9		6
Washington Territory	Spokane Falls	12	Spokane Falls	7	1882	Fort Colville	20		20
West Virginia			Morgantown	0.5	1873	Weston	2	1870	3
Do						Helvetia	4	1877	5
Wisconsin	La Crosse	10	La Crosse	23	1873	Superior City	24		3
Do	Milwaukee	8.5	Milwaukee	3	1877	Fort Crawford	23		20
Wyoming	Cheyenne	2	Cheyenne	17	1880	Fort Bridger	29		20
Do			Fort Washakie	3.4	1882	Fort Sanders	28	1875	4

New Hampshire.—Contoocook, Merrimac county: mean temperature, $31^{\circ}.2$, is $1^{\circ}.2$ below the March average of the last twelve years.

New York.—Palermo, Oswego county: mean temperature, 26.5 , is $1^{\circ}.7$ below the March average of the last thirteen years.

Dannemora, Clinton county: mean temperature, $26^{\circ}.6$, corresponds with the March average of the four preceding years.

North Volney, Oswego county: mean temperature, $28^{\circ}.6$, is $0^{\circ}.04$ above the March average of the last seventeen years.

Ohio.—Wauseon, Fulton county: mean temperature, $33^{\circ}.1$, is $0^{\circ}.3$ above the March average of the last fourteen years. The highest March mean temperature of that period, $43^{\circ}.2$ occurred in 1878; the lowest, $26^{\circ}.5$, occurred in 1877.

Pennsylvania.—Dyberry, Wayne county: mean temperature, $29^{\circ}.5$, is $0^{\circ}.2$ above the March average of the last twenty years.

Texas.—New Ulm, Austin county: mean temperature, $63^{\circ}.4$, is $0^{\circ}.3$ below the March average of the last twelve years.

Vermont.—Woodstock, Windsor county: mean temperature, $26^{\circ}.7$, is 1° above the March average of the last seventeen years.

Virginia.—Wytheville, Wythe county: mean temperature, $45^{\circ}.2$, is $2^{\circ}.4$ above the normal of a period of twenty years.

Variety Mills, Nelson county: mean temperature, $44^{\circ}.5$, is $0^{\circ}.6$ above the average of the last seven years.

West Virginia.—Helvetia, Randolph county: mean temperature, $41^{\circ}.5$, is $1^{\circ}.5$ above the March average of the last eight years.

MONTHLY RANGES OF TEMPERATURE.

The monthly ranges of temperature were greatest in Dakota, Montana, and Idaho, and least in southern Florida and on the Pacific coast. They varied in extremes from 24° at San Francisco, California, to 82° at Fort Assinaboine, Montana, and Forts Bennett and Buford, Dakota.

Stations reporting monthly ranges of 65° or more are as follows: Fort Assinaboine, Montana, and Forts Bennett and Buford, Dakota, 82° ; Cœur d'Alene, Idaho, Huron, Dakota, and Escanaba, Michigan, 80° ; Fort Shaw, Montana, 78° ; Yankton, Dakota, 77° ; Moorhead, Minnesota, La Crosse, Wisconsin, and Des Moines, Iowa, 76° ; Bismarck, Dakota, Alpena, Michigan, and Davenport, Iowa, 73° ; Saint Paul, Minnesota, Mackinaw City and Marquette, Michigan, 72° ; Duluth, Minnesota, 71° ; Omaha, Nebraska, Dodge City, Kansas, and West Las Animas, Colorado, 70° ; Dubuque, Iowa, 69° ; Mount Washington, New Hampshire, 68° ; Fort Maginnis, Montana, and Milwaukee, Wisconsin, 67° ; North Platte, Nebraska, Cleveland, Ohio, and Rio Grande City, Texas, 66° ; Cantonment, Indian Territory, Erie, Pennsylvania, and Saint Vincent, Minnesota, 65° .

Monthly ranges of less than 40° were reported from the following stations: Roseburg, Oregon, Red Bluff, California, Maricopa and Yuma, Arizona, 39° ; Portland, Oregon, Pysht, Washington Territory, and Lewiston, Idaho, 38° ; Pike's Peak, Colorado, and Fort Davis, Texas, 37° ; Los Angeles, California, Fort Grant, Arizona, and Galveston, Texas, 36° ; Port Angeles, Washington Territory, and Salt Lake City Utah, 34° ; Sacramento, California, 32° ; Boise City, Idaho, 30° ; Neah Bay, Washington Territory, and Key West, Florida, 28° ; San Francisco, California, 24° .

GREATEST DAILY RANGES OF TEMPERATURE.

In the several districts the greatest daily ranges of temperature varied as follows:

New England.—From 21° at Eastport, Maine, and New London, Connecticut, on the 5th and 22d, respectively, to 33° at Boston, Massachusetts, on the 30th, and 36° on the summit of Mount Washington, New Hampshire, on the 5th.

Middle Atlantic states.—From 20° at Cape May, New Jersey, on the 30th, to 31° at Fort Myer, Virginia, on the 11th.

South Atlantic states.—From 21° at Charleston, South Carolina, on the 5th, to 34° at Kitty Hawk, North Carolina, on same date.

Florida.—From 17° at Key West on the 14th, to 29° at Sanford on the 5th.

Eastern Gulf states.—From 22° at Pensacola, Florida, on the 29th, to 30° at Vicksburg, Mississippi, on the 10th.

Western Gulf states.—From 24° at Galveston, Texas, on the 1st, to 40° at Fort Smith, Arkansas, on the 5th.

Rio Grande valley.—From 36° at Brownsville, Texas, on the 1st, to 40° at Rio Grande City, Texas, on same date.

Tennessee.—From 30° at Chattanooga on the 10th, to 34° at Knoxville on the 16th.

Ohio valley.—From 24° at Cincinnati and Columbus, Ohio, on the 22d, to 29° at Indianapolis, Indiana, and Pittsburgh, Pennsylvania, on the 10th and 29th, respectively.

Lower lake region.—From 22° at Toledo, Ohio, on the 23d, to 31° at Rochester, New York, on the 29th.

Upper lake region.—From 24° at Port Huron, Michigan, on the 13th, to 39° at Escanaba, Michigan, on the 2d.

Extreme northwest.—From 35° at Moorhead, Minnesota, on the 15th, to 40° at Bismarck, Dakota, on the 2d.

Upper Mississippi valley.—From 26° at Saint Louis, Missouri and La Crosse, Wisconsin, on the 11th and 27th, respectively, to 40° at Davenport, Iowa, on the 11th.

Missouri valley.—From 34° at Leavenworth, Kansas, on the 26th, to 43° at Huron and Yankton, Dakota, on the 9th, and at Fort Bennett, Dakota, on the 26th.

Northern slope.—From 29° at Helena, Montana, on the 11th, to 48° at Fort Shaw, Montana, on the 7th.

Middle slope.—From 23° on the summit of Pike's Peak, Colorado, on the 28th, to 53° at West Las Animas, Colorado, on the 9th.

Southern slope.—From 38° at Fort Davis, Texas, on the 9th, to 48° at Fort Concho, Texas, on the 4th.

Southern plateau.—From 28° at Fort Grant, Arizona, on the 28th, to 45° at El Paso, Texas, on the 28th and 29th.

Middle plateau.— 26° at Salt Lake City, Utah, on the 3d.

Northern plateau.—From 25° at Boise City, Idaho, on the 3d to 32° at Dayton, Washington Territory on the 29th.

North Pacific coast region.—From 21° at Fort Canby, Washington Territory, on the 15th, to 32° at Roseburg, Oregon and Olympia, Washington Territory, on the 3d and 31st, respectively.

Middle Pacific coast region.—From 16° at San Francisco, California, on the 1st and 2d, to 28° at Red Bluff, California, on the 1st.

South Pacific coast region.—From 20° at San Diego, California, on the 1st, to 30° at Yuma, Arizona, on the 25th.

FROSTS.

Frosts occurred in the northern and western districts on the following dates:

New England.—1st to 11th, 13th, 15th to 23d, 26th, 28th to 31st.

Middle Atlantic states.—1st to 31st.

Ohio valley.—1st to 10th, 12th to 17th, 22d, 27th, 28th, 30th, 31st.

Lower lakes.—1st to 31st.

Upper lakes.—1st to 31st.

Extreme northwest.—1st to 31st.

Upper Mississippi valley.—1st to 21st, 23d, 24th, 26th, 27th, 29th, 30th.

Missouri valley.—1st to 31st.

Northern slope.—1st to 31st.

Middle slope.—1st to 6th, 8th to 10th, 12th to 15th, 18th, 19th, 22d, 23d, 25th, 26th, 29th, 30th.

Southern plateau.—1st, 2d, 7th, 11th to 14th, 16th to 22d, 24th to 30th.

Middle plateau.—1st to 4th, 8th to 14th, 16th to 31st.

Northern plateau.—1st to 8th, 12th to 14th, 18th, 20th to 25th, 27th to 31st.

North Pacific coast region.—1st to 8th, 10th, 12th, 13th, 15th, 20th to 24th, 26th to 31st.

Middle Pacific coast region.—3d, 11th, 12th, 19th to 21st, 23d, 24th, 26th to 31st.

South Pacific coast region.—11th, 24th, 25th, 27th.

In the Southern states frosts were reported as follows:

Alabama.—Green Springs, 2d, 15th; Mobile, 1st; Montgomery, 10th, 16th.

Arkansas.—Mount Ida, 2d, 3d, 4th, 9th, 12th, 13th, 15th, 20th; Lead Hill, 3d, 9th, 12th to 15th, 20th; Little Rock, 2d, 9th; Fort Smith, 9th, 15th.

Florida.—Newport and Pensacola, 1st; Archer and Li-mona, 3d.

Georgia.—Augusta, 1st, 2d, 10th; Atlanta, 1st, 10th, 15th; Milledgeville, 10th, 15th; Andersonville, 13th, 14th, 27th.

North Carolina.—Weldon, 1st, 16th, 31st; Chapel Hill, 1st, 10th, 16th, 17th; Brevard, 1st to 5th, 10th, 15th, 16th, 17th, 21st, 26th, 30th, 31st; Ogleeta, 10th, 15th, 16th, 31st; Smithville, 16th, 31st; Fort Macon, 1st, 16th; Hatteras and Wilmington, 1st, 4th; Charlotte, 1st to 5th, 10th, 15th, 16th.

South Carolina.—Stateburg, 3d, 10th, 15th, 16th.

Tennessee.—Knoxville, 1st, 4th, 10th, 15th, 16th; Chattanooga, 1st to 5th, 10th, 15th, 16th; Memphis, 1st to 11th, 15th; Austin, 15th, 16th, 17th; Milan, 10th, 12th, 15th.

Texas.—Cleburne, 2d, 9th; Austin, Clarksville, and Palestine, 9th; Fort Davis, 19th; Fort Stockton, 25th.

On the summit of Mount Washington frosts occurred on the 1st, 3d to 13th, 16th to 20th, 22d to 31st.

The following cases of injury to vegetation by frost have been reported:

Indianola, Texas.—The fruit trees and garden vegetables in this vicinity were injured by the cold weather on the 1st.

Knoxville, Tennessee, 10th.—The severe weather of the past week caused injury to all kinds of fruit.

ICE.

Under the heading "ice in rivers and harbors" the subject of ice formation in the northern section of the country is considered. In the Southern states the following cases of ice formation have been reported:

Arkansas.—Lead Hill, 2d to 9th, 12th to 15th.

North Carolina.—Charlotte, 1st; Weldon, 31st.

Texas.—Indianola, 1st; El Paso, 1st, 28th.

PRECIPITATION.

[Expressed in inches and hundredths.]

In the first column of the following table is shown the average precipitation for March in each of the various districts for several years, as determined from observations made at the Signal Service stations; in the second column are given the averages for March, 1884; and the third column shows the excess or deficiency of March, 1884, as compared with the average.

Average precipitation for March, 1884.

Districts.	Average for March. Signal-Service ob- servations.		Comparison of March, 1884, with the av- erage for sev- eral years.
	For sev- eral years.	For 1884.	
	Inches.	Inches.	
New England.....	4.45	5.04	0.59 excess.
Middle Atlantic states.....	4.21	6.02	1.81 excess.
South Atlantic states.....	5.26	5.98	0.72 excess.
Florida peninsula.....	3.36	1.67	1.69 deficiency.
Eastern Gulf states.....	6.24	9.03	2.79 excess.
Western Gulf states.....	4.21	4.83	0.62 excess.
Rio Grande valley.....	1.10	0.12	0.98 deficiency.
Tennessee.....	5.97	9.07	3.10 excess.
Ohio valley.....	3.85	3.48	0.37 deficiency.
Lower lake region.....	2.82	2.78	0.04 deficiency.
Upper lake region.....	2.40	2.16	0.24 deficiency.
Extreme northwest.....	1.24	0.69	0.55 deficiency.
Upper Mississippi valley.....	2.45	2.90	0.45 excess.
Missouri valley.....	1.48	2.65	1.17 excess.
Northern slope.....	0.54	1.00	0.46 excess.
Middle slope.....	0.01	1.06	0.45 excess.
Southern slope.....	0.72	0.39	0.33 deficiency.
Southern plateau.....	0.82	3.20	2.44 excess.
Northern plateau.....	1.61	1.94	0.33 excess.
North Pacific coast region.....	5.82	2.40	3.42 deficiency.
Middle Pacific coast region.....	2.98	8.06	5.08 excess.
South Pacific coast region.....	0.84	6.69	5.85 excess.
Mount Washington, N. H.....	6.97	4.16	2.81 deficiency.
Pike's Peak, Colo.....	2.16	0.39	1.77 deficiency.
Salt Lake City, Utah.....	1.98	3.09	1.71 excess.

The distribution of rainfall over the United States and Canada, as determined from the reports from more than six hundred stations, is exhibited on chart iv.

In the lower lake region the precipitation for the month was normal. In the upper lake region, extreme northwest, Florida peninsula, southern slope, Rio Grande and Ohio valleys, deficiencies occurred, ranging from 0.24 to 1.69. The average precipitation in the north-Pacific coast region was 2.40, which is considerably less than half of the March average for that district. With these exceptions, the monthly precipitation in the United States was in excess of the average. In California and the southern plateau it was about four times as great as the average for March. Large excesses also occurred in Tennessee, the middle Atlantic and eastern Gulf states. In the Missouri valley the precipitation exceeded the average by 1.17, and in the other districts, where excesses are shown, they were less than 1.00, except at Salt Lake City, Utah, where it amounted to 1.71.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The departures exhibited by the reports from the regular Signal Service stations, are shown in the table of average precipitation for March, 1884. Voluntary observers report the following notes in connection with this subject:

Arkansas.—Lead Hill, Boone county: monthly precipitation, 3.95, is 0.43 above the March average of the last two years.

California.—Fall Brook, San Diego county: monthly precipitation, 10.90, is the heaviest during March for the last eight years.

Illinois.—Anna, Union county: monthly precipitation, 4.05, is 0.20 below the March average of the last nine years. The largest March precipitation of that period, 8.82, occurred in 1876; the smallest, 1.99, occurred in 1881.

Riley, McHenry county: monthly precipitation, 1.51, is 1.16 below the March average of the last twenty-three years.

Mattoon, Coles county: monthly precipitation, 2.75, is 0.97 below the March average of the five preceding years.

Swanwick, Perry county: monthly precipitation, 2.75, is 0.86 below the March average of the two preceding years.

Indiana.—Wabash, Wabash county: monthly precipitation, 2.05, is 1.01 below the March average of the last eight years.

Logansport, Cass county: monthly precipitation, 4.02, is 0.58 above the March average of the last twenty-five years.

Vevay, Switzerland county: monthly precipitation, 1.37, is 2.66 below the average of March for a period of twenty years.

Kansas.—Yates Centre, Woodson county: monthly precipitation, 1.09, is 0.27 below the March average of the last four years.

Wellington, Sumner county: monthly precipitation, 1.02, is 0.20 below the March average of the last five years.

Independence, Montgomery county: monthly precipitation, 1.00, is 1.20 below the March average of the last twelve years.

Lawrence, Douglas county: monthly precipitation, 2.73, is 0.55 above the March average of a period of seventeen years.

Maine.—Gardiner, Kennebec county: monthly precipitation, 5.40, is 1.44 above the March average of a period of forty-eight years.

Maryland.—Fallston, Harford county: monthly precipitation, 5.71, is 1.33 above the March average of the last thirteen years. The precipitation for the three months ending March 31, 1884, is 16.88, or 5.36 above the average of the corresponding period of the last thirteen years.

Massachusetts.—Worcester, Worcester county: monthly precipitation, 2.37, is 1.15 below the March average of the last forty-five years. The largest March precipitation of that period, 7.71, occurred in 1859; the smallest, 0.23, occurred in 1854.

Missouri.—Saint Louis: monthly precipitation, 3.63, is 0.74 below the normal for a period of forty-seven years.

New Hampshire.—Contoocook, Merrimac county: monthly precipitation, 4.20, is 0.75 above the March average of the last twenty years.